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that, of the ascending nodes of 34 planets, 28 are found in the first semi-circle and only 6 in the second. Again, the semi-circles that contain the greatest number of L. P.'s of planets are between 0° and 180° or 10° and 190°. That which contains the greatest number of nodes is between 35° and 215°. In the first case there are 26, and in the latter 29. The quadrant containing the largest number of L. P.'s of planets is that between 11° and 101°, of which there are 16. That containing the largest of nodes is from 35°½ to 125°½, of which there are 20. Perhaps what I have now brought under your notice may interest the Royal Astronomical Society."

A Catalogue of the Right Ascensions of 1009 *Stars contained in the Catalogue of the British Association for the Advancement of Science, being chiefly those of the 6th and 7th magnitudes.* By Lord Wrottesley.

" In the commencement of the year 1842, I resolved on erecting an Observatory near to my residence in Staffordshire; and on the 29th March in that year the first stone of the building was laid by my youngest son, on an elevated position, about 500 yards to the N. by W. of the mansion. On the 11th May following, the transit piers were fixed, and on the 8th of October in the same year, the 5-foot transit, with which I observed my Blackheath Catalogue of 1318 stars, was finally placed upon them, and ready for work in its new locality.

" In the preceding January I had purchased from Mr. Beaumont of Finningley, in the county of York, an achromatic telescope of 10 feet 9 inches focal length, with an object-glass of 7¾ inches clear aperture; of this the flint glass is by Guinand, and the crown by Dollond, who gave the curves to the glasses and completed the instrument. The telescope is equatoreally mounted after the English fashion.

" The building was, therefore, designed to contain the transit and equatoreal above described, with apartments for the residence of an observer.*

" The shaded portion of the accompanying ground-plan, which is surrounded by a 9-inch wall, represents a mass of concrete, which is continuous beneath the flooring of both the transit and equatoreal rooms, and supports the transit and equatoreal piers, and the piers of two sidereal clocks and the driving clock. The wall which divides the equatoreal from the transit-room is built on a brick arch which bestrides the concrete mass, so that the latter, and the piers supported by it, are completely independent of the shell of the building itself. All the piers repose on vast masses of sandstone, which rest on the concrete base.

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* The author here subjoins a ground-plan of the Observatory which, he remarks, will save much tediousness of description. He also presents to the Society a view of the south front of the building.

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"The wall of the building is double, the outer one is of stone, and is separated by a vacant space of an inch from the interior wall, which is of brick.

"The concrete mass, which is about $4\frac{1}{2}$ feet high, has a paved floor on its north side, and there are gratings at the base of the walls, opening into a drain, which runs round the foundations of the building, and keeps them always dry. The basement story of the building is partly occupied by the kitchen, from which the smoke is conveyed underground to a chimney at a distance, and partly by the concrete mass above described, and which is beneath the flooring of the transit and equatoreal rooms.

"The transit piers, and indeed the whole furniture of the transit-room, the clock included, are, with trifling exceptions, the same as at my former observatory, and the room is of the same identical dimensions. There is, however, an improvement in the machinery employed for opening the roof, which is concealed in the north wall; the plan of it was borrowed from Mr. Beaumont.

"The equatoreal piers and the revolving dome were all purchased with the telescope, and conveyed hither from Yorkshire. The dome having been cut into six parts, was put together again; and the whole building was erected under my superintendence by my own workpeople.

"The three rooms are warmed by a hot-water apparatus, of which the boiler is placed in the kitchen, adjoining the fireplace, which is in the west wall.

"The telescope is driven by clockwork, and in the equatoreal room there is a sidereal clock by Baird, with a mercurial compensation pendulum by Dent.

"The computing-room is furnished with a pier, which rests on a base distinct from the concrete mass. This is intended for the occasional support of a meridian circle, or portable transit. It commands the transit of *Polaris* to the north, and of such stars to the south as have south declination. On it was placed the Lee circle, which the Society were so kind as to lend me for a time.

"There is a detached pier to the south of the building, which carries the transit meridian mark, viewed through a lens, and serves also for the occasional support of a portable transit for observing on the prime vertical, or small telescope.

"The Observatory is furnished with an anemometer by Osler (the vane and pressure-plate of which are represented in the painting), and with barometers and other meteorological instruments.

"The site of the building is, unfortunately, not a very favourable one for astronomical observations; for it is situated between the coal-fields of Staffordshire, which are about six miles to the E.S.E., and those of Shropshire about ten miles to the W.N.W.; there is also a grove of trees to the south. Owing to the first of these causes, and perhaps in some degree owing to the last also, the difficulty is very great of obtaining satisfactory observations of stars having considerable south declination; and not only has the

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completion of the Catalogue been much retarded by this cause, but stars have possibly been lost which would otherwise have been obtained.

"The latitude of the Observatory was determined,—first, by the Lee circle, placed on the pier in the computing-room above described; secondly, by observations on the prime vertical, made by the collimating transit of 20 inches focal length, fixed on the detached pier 128 feet to the south of the building; thirdly, by a Troughton's sextant, also placed on the last-mentioned pier."

Lord Wrottesley, for reasons which he assigns, did not deem it advisable to use the observations on the prime vertical in determining the definitive value of the latitude. The observations with the Lee circle, amounting to 101 in number, were made by himself, Mr. Goddard, and Mr. Philpott, between May 1843 and January 1845. They make the latitude $=52^\circ\ 37'\ 3''{\cdot}81$, giving weight to each night's result according to the number of observations on which it depends. The sextant observations give 4 results only, but they are derived from 47 altitudes; they were made by Mr. Hartnup, of the Liverpool Observatory, in April and June 1847. They are very accordant. They give the latitude $=52^\circ\ 37'\ 0''{\cdot}77$, after applying the correction for the pier.

The latitude given by the circle has a probable error of $0''{\cdot}31$, and that derived from the sextant observations of $0''{\cdot}32$. Lord Wrottesley, therefore, took the simple mean, which gave the latitude $=52^\circ\ 37'\ 2''{\cdot}3$, a result which, he remarks, is probably not very far from the truth.

"The longitude," continues Lord Wrottesley, "was also obtained by the kind exertions of Mr. Hartnup, who, though much occupied with the public duties of the office to which he has been so deservedly appointed, and which he fills so ably, has always shown a most praiseworthy zeal and promptitude when I have been compelled to solicit his aid. Mr. Hartnup made two trips with fourteen chronometers, on 6th July and 31st of Aug., 1845, between my Observatory and that of Liverpool, and he himself observed all the transits for obtaining the clock errors at both places, observing on each occasion several stars with each transit instrument, and with the illuminated ends both east and west."

The author here gives the partial values, and the results, which are highly satisfactory. The mean of the first series gives the longitude east of Liverpool Observatory $=3^{\mathrm{m}}\ 6^{\mathrm{s}}{\cdot}5343$; the mean of the second series gives the longitude $=3^{\mathrm{m}}\ 6^{\mathrm{s}}{\cdot}5529$. Consequently, the mean of the two determinations of the longitude East of Liverpool Observatory $=3^{\mathrm{m}}\ 6^{\mathrm{s}}{\cdot}54$. Now the longitude of Liverpool Observatory as finally corrected $=12^{\mathrm{m}}\ 0^{\mathrm{s}}{\cdot}11$. Hence the longitude of Wrottesley Observatory West of Greenwich $=8^{\mathrm{m}}\ 53^{\mathrm{s}}{\cdot}57$, with a probable error of $0^{\mathrm{s}}{\cdot}04$ only.

"The years which immediately succeeded the foundation of the Observatory, were thus employed in obtaining its position, and in observations with the equatoreal, which I had the honour of communicating to the Royal Society, and which are printed in the

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Philosophical Transactions for 1851, and in some other observations of double stars with the same instrument, which I intend to lay before the Astronomical Society at some future period.

"When the Catalogue of the British Association made its appearance, I was anxious to assist in correcting the places there given; in short, to perform the same office in respect to that most valuable publication, which I had already undertaken in reference to the prior Catalogue of the Astronomical Society. Also, twenty years having elapsed from the epoch of my former Catalogue, I thought that sufficient time had been allowed for exhibiting the effects of proper motion, and I was curious to see, whether some of the stars which had shown symptoms of it in 1830–5 still continued to manifest the same wandering disposition.

"I selected, therefore, above 1000 stars from the Catalogue of the British Association, with the intention of obtaining at least five observations of each, being chiefly those stars that had been already observed at Blackheath, and had been discovered to possess proper motion, also stars, the right ascensions of which, as given in my Catalogue, differed from those given by other observers; also stars contained in that Catalogue, the right ascensions of which seemed to have been imperfectly determined by other observers, or which presented anomalies, as shown by Mr. Baily's notes to the British Association Catalogue, and other stars taken at convenient intervals to complete the number.

"The observations of the Catalogue were begun on the 1st January, 1850 (the epoch of the British Association Catalogue), and concluded on the 24th December, 1853. The observations were all made and computed by my assistant, Mr. Richard Philpott, to whom I am greatly indebted for the care and attention with which he has applied himself to the completion of the work; and the column of the greatest differences from the mean sufficiently shows that he may lay claim to the character of being a very excellent transit observer. He has been ably and diligently assisted in the computations by my second assistant, Mr. Frederic Morton, who has the charge of the equatoreal. All the computations have been performed in duplicate by these two gentlemen, and, therefore, great reliance may be placed upon all the results."

Lord Wrottesley proceeds to state that, from various causes, several of the stars selected were not obtained, in consequence of which the number on the list was finally reduced to 1009. In his enumeration of stars which were looked for without success, he appends a foot-note which deserves attention. It is expressed in the following terms:—

"I have experienced great inconvenience from the omission in the British Association Catalogue of a column giving the number in the Astronomical Society's Catalogue. There should also have been columns giving the initials of the authorities for all the places given. I hope that in a future edition these omissions may be supplied. I think that had the late Mr. Baily lived to complete the work, they would not have occurred."

The author next gives an account of the mode of ascertaining

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the instrumental corrections. He gives three tables, containing the corrections for collimation, level, and deviation. He then explains the mode of reducing the observations which was pursued.

"The Catalogue is founded on the apparent places of the *Nautical Almanac* stars given in that work for the years during which the Catalogue was in course of observation.

"In observing double stars, the brightest, and in cases of equal brightness, the preceding has been observed.

"The Hardy or transit clock has behaved exceedingly well during the whole course of the observations; the rate has been remarkably steady, and the beat is, as before, loud and distinct. This is, indeed, an admirable piece of mechanism, and of all the instruments in my Observatory has given me the most unalloyed satisfaction.

"No observations have been rejected when the star has been observed on three wires, or upwards, except in one instance, alluded to in the notes, when an observation on one wire of 1378 B.A.C. was not used in the reduction; but no observations of Catalogue stars, on less than three wires, have been employed in forming the Catalogue, except in the single instance of 2091 B.A.C., which is also alluded to in the notes.

"It will be seen by the notes, that many of the stars have been often marked as faint; such stars are probably either variable, or much below the magnitudes assigned in the British Association Catalogue, and copied in column 5 of mine.

"These notes, as to faintness, have been formed on the following principle:—A note has been made directing attention to the fact, whenever, of five observations of any star, the majority; of four, the half or more; of three, the majority; and of two, the whole, have been distinguished in the observing book by the star being marked as faint, or very faint.

"Some remarks of importance as to identity and proper motion will be found in the notes. Upon the whole the proper motions now obtained agree very fairly with those previously deduced by Mr. Baily and his successors, at the time of the construction of the British Association Catalogue; but owing to the shortness of the interval elapsed, and the smallness of these quantities, as compared with the probable amount of the errors of observation, perfect reliance cannot be placed on results of this description."

The author here explains the mode of forming these notes, and concludes in the following terms:—

"I have thus brought to a conclusion my third and last star Catalogue, for I need hardly make an apology for calling that *mine*, which has been produced by a large outlay of my own capital, both material and intellectual: but I do not underrate, and trust I shall ever be willing to acknowledge, the value of the services of the able assistant, who, besides performing all the computations under my superintendence, made all the observations from whence the Catalogue has been deduced.

"I fear that I shall henceforth have still less time to spare for

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astronomical labours than heretofore, and I shall devote all my resources to the completion with the equatoreal of a catalogue of double stars.

" Indeed, having passed the meridian of life, and having now many other avocations that engross a considerable portion of my time, and which are likely to augment rather than diminish, I have long arrived at the conclusion, that, however humble my powers may be, I can more effectually promote the interests of science in the way of counsel rather than action,—in the cabinet rather than the field.

" *Wrottesley, Dec.* 27, 1853."

Occultation observed at Ashurst. By Robert Snow, Esq.

Jan. 1*st*, 1854.

North Lat.	51° 15′ 58″
West Long.	$1^{m}\ 10^{s}$

Immersion of 33 *Capricorni.*

	$23^{h}\ 41^{m}\ 48^{s}{\cdot}5$
Subtracting for Clock fast	$-16{\cdot}7$
	$23\ \ 41\ \ 31{\cdot}8$ True Sid. Time.

Well observed. Instantaneous at moon's dark limb. Dark limb visible.

Emersion of 33 *Capricorni.*

	$0^{h}\ 36^{m}\ 30^{s}\pm$
Subtracting for Clock fast	$-16{\cdot}7$
	$0\ \ 36\ \ 13\pm$

At moon's bright limb uncertain. Moon and star very low.

Observations of the Nebula of Orion, made at Valletta, with the Twenty-foot Equatoreal. By William Lassell, Esq.

The following are a few extracts from this paper :—

" *Wednesday*, 10*th Nov*., 1852. About $4^{h}{\cdot}0$ Sid. Time, turned to the nebula, power 260. A marvellous spectacle. The brilliancy of the trapezium, and of 'the 5th and 6th stars,' was most striking. The 6th seemed equally bright with the 5th, and quite as easily seen. It is removed clear away from the rays of the large star.

" It seems remarkable that in this telescope there is no difference in their visibility, while in telescopes considerably less in power the 5th star is incomparably easier to see than the 6th. I do not find so many more stars in the neighbourhood as I had expected. With 160 many sparkling points flashed on the eye by glimpses all over the nebula immediately around the trapezium; but it would be difficult to mark their places.